ZOOM 510 DUAL POWER DRIVER Operation Manual

Thank you for selecting the ***ZOOM 510*** (hereafter simply called the "***510***").

Please take the time to read this manual carefully so you can get the most out of your 510 and ensure optimum performance and reliability.

Retain this manual for future reference.

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ZOOM®
CATCH US IF YOU CAN

1 Major Features

- Dedicated distortion unit with two on-board distortion modules (PRE DRIVE and MAIN DRIVE).
- Parallel or serial connection of distortion modules allows the creation of variations that are difficult to achieve with conventional multi-effect devices, such as adding light distortion after strong distortion. The result is a wide variety of overdrive and distortion sounds.
- Total of 16 effects (eight effect types per distortion module) can be combined . Besides distortion effects, PRE DRIVE also contains compressor, pedal wah, auto wah, octaver and other versatile effects.
- You can switch between 24 patches to store diverse settings based on your preference.
- Integrated auto-chromatic tuner for guitar. You can tune your instrument easily anywhere, any time. You can also leave the tuning function disabled all the time.
- Mixing balance of PRE DRIVE and MAIN DRIVE can be varied according to picking intensity, using the auto-parallel connection feature. This provides a wide expression range for solo play.
- Optional expression pedal FP01 can be used to control pedal wah, MAIN DRIVE gain, mixing balance for parallel connection and other parameters. Optional foot switch FS01 allows switching PRE DRIVE on and off during a performance.
- Dual power supply design allows the unit to be powered from a 9V alkaline battery (6LR61) or an AC adapter.

2 Safety Precautions

USAGE AND SAFETY PRECAUTIONS

In this manual, symbols are used to highlight warnings and cautions for you to read so that accidents can be prevented. The meanings of these symbols are as follows:

Warning This symbol indicates explanations about extremely dangerous issues. If users ignore this symbol and handle the device incorrectly, serious injury or death could result.

Caution This symbol indicates explanations about dangerous issues. If users ignore this symbol and handle the device the wrong way, bodily injury and damage to the equipment could result.

Please observe the following safety tips and precautions to ensure hazard-free use of the 510.

About power

Warning Since power consumption of this unit is fairly high, we recommend the use of an AC adapter whenever possible. When powering the unit from a battery, use only an alkaline type.

AC adapter operation

- Be sure to use only an AC adapter which supplies 9 V DC, 300 mA and is equipped with a "center minus" plug (Zoom AD-0006). The use of an adapter other than the specified type may damage the unit and pose a safety hazard.
- Connect the AC adapter only to an AC outlet that supplies the rated voltage required by the adapter.
- When disconnecting the AC adapter from the AC outlet, always grasp the adapter itself and do not pull the cable.
- If the unit is not to be used for a long time, disconnect the AC adapter from the outlet.

Battery operation

- Use only a 9 V (alkaline) battery (6LR61).
- The 510 cannot be used for recharging.
  Pay close attention to the labelling of the battery to make sure you choose the correct type.
- If the 510 is not to be used for an extended period of time, remove the battery from the unit.
- If battery leakage has occurred, wipe the battery compartment and the battery terminals carefully to remove all remnants of battery fluid.
- While using the unit, the battery compartment cover should be closed.

Environment

Caution Avoid using your 510 in environments where it will be exposed to:

- Extreme temperature
- High humidity or moisture
- Excessive dust or sand
- Excessive vibration or shock

Handling

Caution

- The 510 is a precision instrument. Except for the foot switches, do not push other parts with your feet or subject them to strong force.
- Take care that no foreign objects (coins or pins etc.) or liquids enter the unit.
- Be sure to turn the power to all equipment off before making connections.
- Before moving the unit, turn the power off and disconnect all cables and the AC adapter.

Alterations

Caution Never open the case of the 510 or attempt to modify the product in any way since this can result in damage to the unit.

Usage precautions

Electrical interference

For safety considerations, the 510 has been designed to provide maximum protection against the emission of electromagnetic radiation from inside the device, and from external interference.However, equipment that is very susceptible to interference or that emits powerful electromagnetic waves should not be placed near the 510, as the possibility of interference cannot be ruled out entirely.

Whatever the type of digital control device, the 510 included, electromagnetic damage can cause malfunctioning and corrupt or destroy data. Since this is an ever-present danger, thorough care should be taken to minimize the risk of damage.

Cleaning

Use a soft, dry cloth to clean the 510. If necessary, slightly moisten the cloth. Do not use abrasive cleanser, wax, or solvents (such as paint thinner or cleaning alcohol), since these may dull the finish or damage the surface.

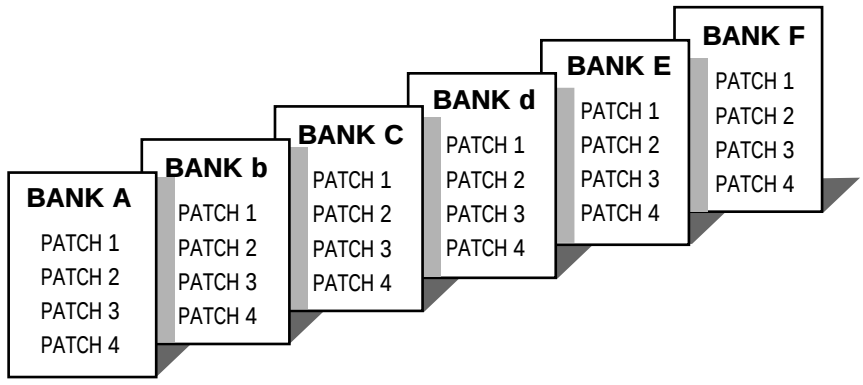
Connecting cables and input and output jacks

You should always turn off the power to the 510 and all other equipment before connecting or disconnecting any cables. Also make sure to disconnect all cables and the AC adapter before moving the 510.

3 What Are Banks and Patches?

- **PATCH**
  A group of the settings for a certain effect type is called a PATCH. The 510 comes with 24 preset patches which can be changed (edited) by the user.

- **BANK**
  The 510 calls up patches in sets of four, called a "bank".



4 PATCH LIST

The 510 has memory capacity for 24 patches. At the factory, these are programmed with recommended settings. The user can Edit and Store any patch, and also restore the factory settings.

PATCH#	PATCH NAME	PRE DRIVE		MAIN DRIVE	COMMENT
A1	Multi Drive	RHYTHM	–	DISTORTION	Dual distortion sound for all styles
A2	Metallic	OFF	–	METAL	Metal sound for low-note riff
A3	The Over Drive	COMP	–	OVER DRIVE	Standard overdrive with comp
A4	FUZZY	OFF	–	FUZZ	Contemporary fuzz sound
b1	Power DIST	COMP	/	DISTORTION	Stacking amp simulation
b2	Rhythm & Blues	RHYTHM	–	OVER DRIVE	Crunchy overdrive, good for R&B
b3	Feelin' Wah	AUTO WAH	–	OVER DRIVE	Wah controlled by picking
b4	Bass Plus	OCTAVE	–	OVER DRIVE	Play "Superstition"!
C1	Violent Wah	PEDAL WAH	–	FAT DRIVE	Half-opened pedal wah sound
C2	Heavy Bottom	BOOSTER	/	DISTORTION	Heavy drive with bottom tone
C3	GRUNGE!	LIGHT OD	–	GRUNGE	High gained grunge drive
C4	Hard Drive	COMP	–	OVER DRIVE	"Hard drivin" turbo overdrive
d1	The Crunch	BOOSTER	–	DISTORTION	Crunch sound, good for rock & roll
d2	Vintage	RHYTHM	–	BLUES OD	Vintage drive sound, good for blues
d3	Crunch Wah	AUTO WAH	/	OVER DRIVE	Play hard to add wah effect
d4	Dynamic OD	DYNAMIC OD	/	OVER DRIVE	Touch sensitive drive
E1	OD Line (AMP SIM)	LIGHT OD	–	OVER DRIVE	Overdrive sound for line connection
E2	DIST Line (AMP SIM)	LIGHT OD	–	FAT DRIVE	Distortion sound for line connection
E3	Small Box (AMP SIM)	BOOSTER	/	BLUES OD	Small amp simulation for line connection
E4	Old-Fashioned (AMP SIM)	COMP	–	LEAD	Old amp simulation for line connection
F1	Pedal Boost	BOOSTER	–	LEAD (Pd)	Main drive can be controlled by using FP01
F2	COMP+DRIVE Mix	COMP	–	OVER DRIVE (Pd)	Use FP01 to add overdrive
F3	WAH ↔ DIST	AUTO WAH	/	BLUES OD (Pd)	Can be changed to overdrive by FP01
F4	Metal Octave	OCTAVE	–	METAL	Metallic sound, play single note

** In the "PRE DRIVE MAIN DRIVE" column, "–" indicates serial connection and "/" parallel connection.*
** ZNR (ZOOM NOISE REDUCUTION) should be adjusted for the guitar you use.*
** The OCTAVE effect is not suitable for chord input. To prevent wrong operation, pick only precise single notes.*

5 Configuration of Effects

The patches of the 510 are created using the PRE DRIVE, MAIN DRIVE, HIGH/LOW (equalizer), and ZNR/AMP (Zoom Noise Reduction/Amp Simulator) modules. You can imagine a module as a box containing various effect settings.

PRE DRIVE and MAIN DRIVE each contain eight effect types, from which you can choose one at a time. Each effect type in turn is made up of several effect parameters that determine the sound. Effect parameters can be adjusted, just as you can turn the knobs on a single compact effect device. A patch is a combination of two effects from the modules, each with their effect parameters set to certain values.

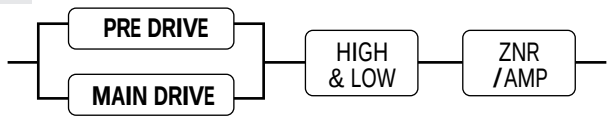
The effects from PRE DRIVE and MAIN DRIVE can be combined (linked) in two different ways, as described below. The type of link is also stored as part of the patch.

- **SERIAL**
  PRE DRIVE and MAIN DRIVE are connected in series (one after the other). For example, PRE DRIVE could first apply light distortion, and then MAIN DRIVE could add heavy distortion.

SERIAL

- **PARALLEL**
  PRE DRIVE and MAIN DRIVE are connected in parallel (side by side) and their output is mixed. For example, PRE DRIVE could apply the OCTAVE effect and MAIN DRIVE the OVERDRIVE effect simultaneously.

PARALLEL



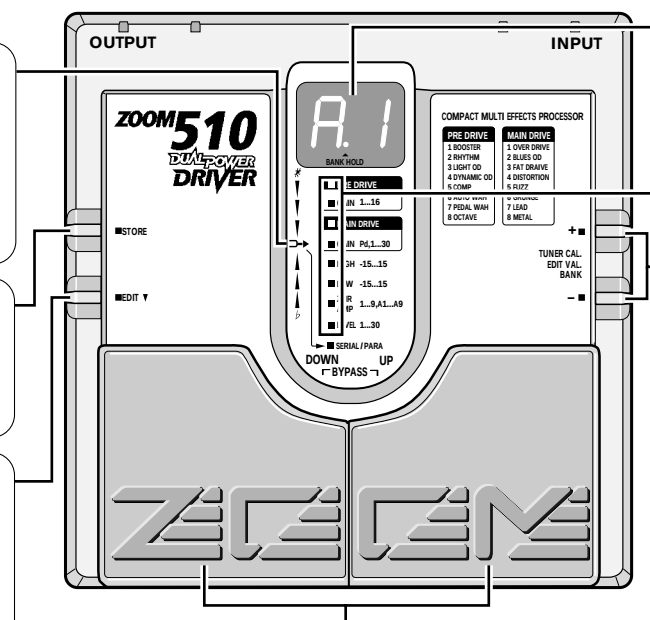
6 Controls, Functions and Connections

Front Panel

TUNER indicator
- **Bypass/Tuner mode:**
  Indicator shows that tuning function is active and also serves to show the correct fine tuning position.
- **Edit mode:**
  Indicator flashes when SERIAL/PARA (Serial/parallel) switching is carried out.
- **BATTERY EMPTY WARNING display**
  When the unit is powered from the battery and the battery is running low, this indicator begins flashing at a faster rate than in Edit mode. In such a case, replace the battery as soon as possible.

STORE key
When the contents of patches are to be stored, this key is used for putting the unit in store standby status and to execute the store function.
- **Setting of direct load function**
  When the STORE key is pressed for at least 1 second during Play mode (during performance), the direct load function can be switched on or off. [For details, see 10 Patch Switching (Application: Direct Load OFF).]

EDIT key (for creating your own patches)
This key serves to toggle between the Play mode and Edit mode (mode for creating patches to suit your taste).
In Edit mode, this key can be used to select the effect parameters you wish to change. Also, when the effect parameter SERIAL/PARA is selected, press this EDIT key to return from the Edit mode to the Play mode.
- **Setting of bank hold function**
  When the EDIT key is held down for at least 1 second in Play mode, the bank hold function is turned on or off. [For details, see 9 Patch Switching (Application: Bank Hold ON).]



DISPLAY
Displays information required to operate the 510.
- **Play mode**
  Displays the selected bank (A-F) and patch (1-4).
- **Edit mode**
  Displays the value of the selected effect parameter.
- **Bypass/Tuner mode**
  Shows the pitch of the input signal.

PARAMETER CURSOR indicator
- **Play mode**
  The currently used effect module lights.
- **Edit mode**
  The indicator lights up for the currently used effect module, and the indicator flashes for the effect module that is turned off. Also, the indicator for the effect module selected for editing flashes.
- **Bypass/Tuner mode**
  Indicators function as tuning meter.

VALUE +/- keys
- **Play mode**
  The keys serve for bank switching.
- **Edit mode**
  The keys serve for changing the effect parameter.
- **Bypass/Tuner mode**
  The keys serve for setting the tuner reference pitch (calibration).

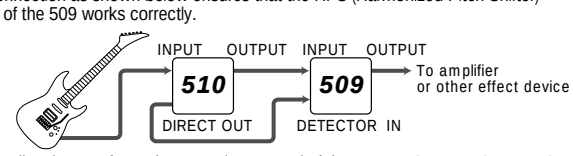
PATCH UP (right)/DOWN (left) pedals
- **Play mode**
  The pedals serve for patch switching. Pressing both pedals simultaneously activates the Bypass/Tuner mode.
- **Edit mode**
  The pedals serve for selecting effect parameters. Pressing both pedals simultaneously turns the currently selected effect module on or off.
- **Bypass/Tuner mode**
  Pressing either pedal cancels the Bypass/Tuner mode to return to Play mode.

Rear Panel

INPUT jack
Instrument input.
When the unit is powered by the battery, this jack also functions as the power on/off switch. The 510 is powered on by plugging a shielded cable into this jack. When the unit is not in use, the cable should be disconnected to prevent battery drain.

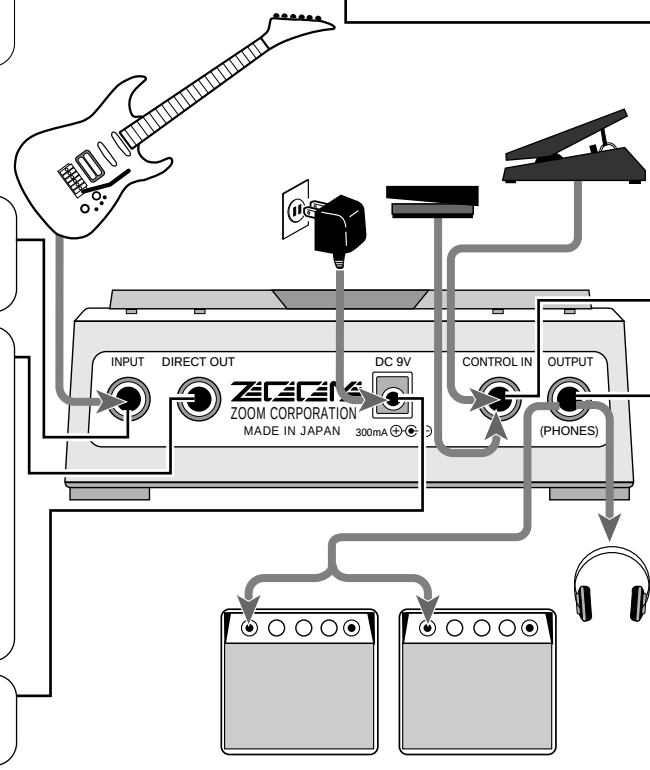
DIRECT OUT jack
Supplies the signal from the INPUT jack without any processing.
Connect to equipment with high input impedance, such as a guitar amplifier or other effect device.

HINT When the 510 is used together with the DUAL POWER MODULATOR 509, making the connection as shown below ensures that the HPS (Harmonized Pitch Shifter) effect of the 509 works correctly.



For details, please refer to the operation manual of the DUAL POWER MODULATOR 509.

DC IN (AC adapter) jack
Serves for connecting an AC adapter (Zoom AD-0006) which delivers 9 VDC, 300 mA with a "center minus" plug configuration. The 510 is powered on by plugging an AC adapter into this jack.

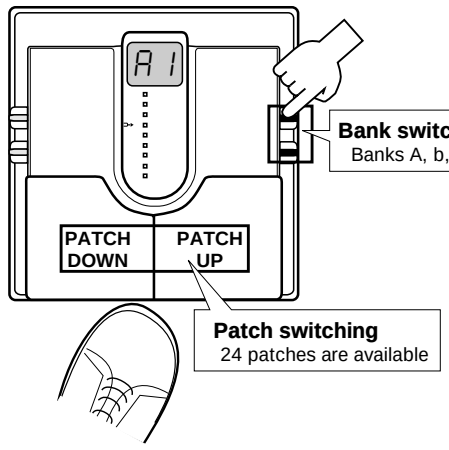


CONTROL IN jack
The optional foot switch FS01 or expression pedal FP01 can be connected here, for external control of the 510.
- **When the foot switch FS01 is connected:**
  The PRE DRIVE effect module is switched on and off with the foot switch.
- **When the expression pedal FP01 is connected:**
  The pedal controls a function determined by a parameter of the currently selected patch, as described below.
  (1) Parameter 1 (PRE DRIVE effect type) set to "7" (pedal wah):
  Pedal functions as pedal wah.
  (2) Parameter 4 (GAIN parameter of MAIN DRIVE) set to "Pd" :
  Pedal controls gain of MAIN DRIVE.
  (3) Parameter 9 (Serial/parallel switching) set to "Pd" :
  Pedal controls mixing balance of PRE DRIVE and MAIN DRIVE modules.

**** Functions (1) - (3) can be used simultaneously. For patches where (1) - (3) do not apply, the pedal serves as volume pedal to control the overall output level.***

OUTPUT jack
This jack is for the output signal from the 510. You can connect either a single guitar amplifier, using a monaural shielded cable, or two guitar amplifiers, using a Y-type stereo shielded cable, or a pair of stereo headphones. If the volume level is low when using headphones, use headphones with low impedance (32 ohms or less).

7 Selecting Patches

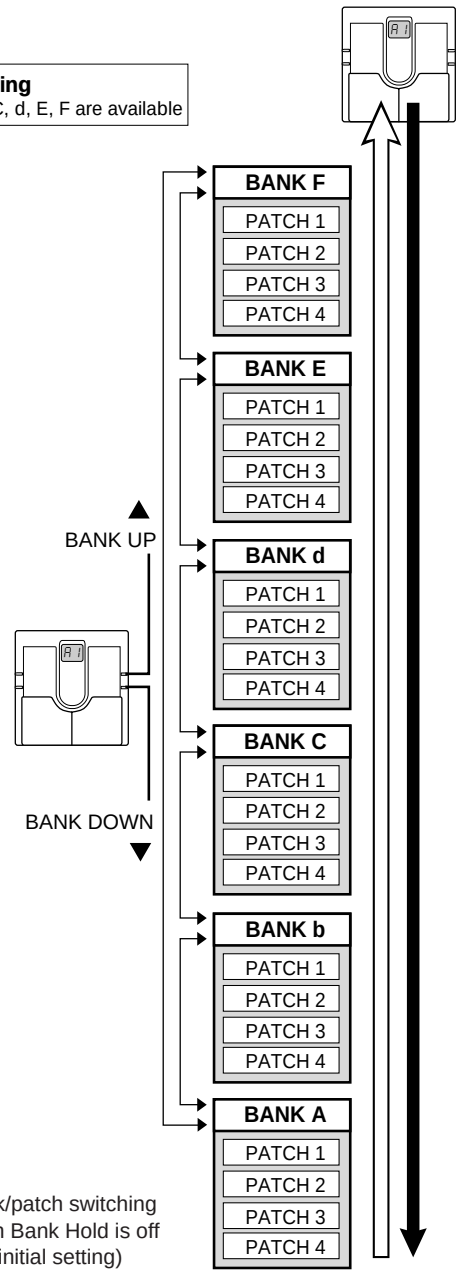


The 24 patches can be easily selected by pressing the patch pedals. The right patch pedal switches to the next patch and the left patch pedal switches to the previous patch.

In the initial condition, the 510 is set up so that the patch pedals select patches continuously, but you can also set up the unit so that patches are switched only within a certain bank of four patches. [For details, see section 9 Patch Switching (Application: Bank Hold ON).]

Banks are selected with the VALUE +/- keys. Press the VALUE+ key to select the next bank, and the VALUE- key to select the previous bank.

For example, to switch from Patch 2, Bank A to Patch 3, Bank C, the patch pedal would have to be pressed nine times. Instead, you can press the VALUE+ key twice to switch to Bank C, and then press the patch pedal (UP) just once to select Patch 3.

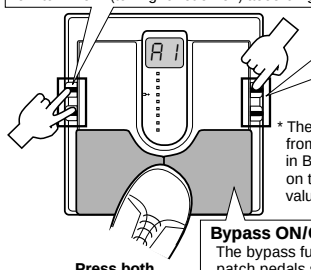


Bank/patch switching when Bank Hold is off (initial setting)

8 Using the Bypass/Tuner Mode

The effects of the 510 can be turned off (bypassed) temporarily, so that only the original sound of the instrument is heard. In this mode, the auto-chromatic tuning function via the LED display is also active.

Tuner ON/OFF
Pressing the EDIT key and the STORE key simultaneously for more than one second in Play mode will allow you to select whether or not to activate the tuning function in Bypass mode. When you change the setting, the display will show"tunEr oFF" (tuning function off) or "tunEr on" (tuning function on) according to the setting.



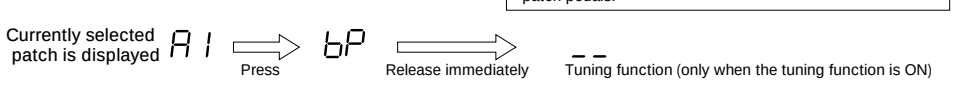
Calibration
Select reference pitch for auto-chromatic guitar tuner (calibration).

* The reference pitch (A) can be adjusted in the range from 435 to 445 Hz. When the BANK key is pressed in Bypass/Tuner mode, this is shown as "35" to "45" on the display for a second. Adjust to the suitable value. At power-on, the setting is 440 Hz (40).

Bypass ON/OFF
The bypass function is invoked by pressing the left and right patch pedals simultaneously.
To cancel the Bypass/Tuner mode, just press one of the patch pedals.

Bypass mode

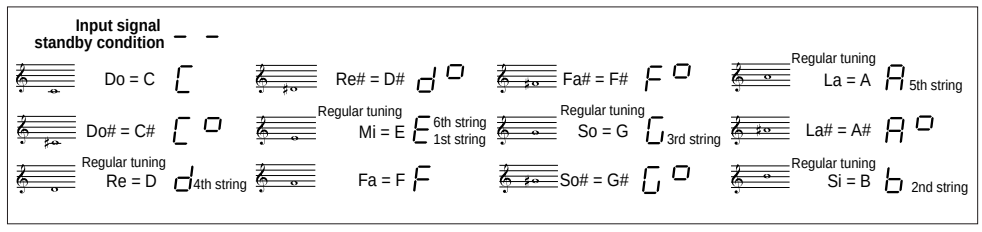
Pressing both patch pedals simultaneously activates the Bypass mode.



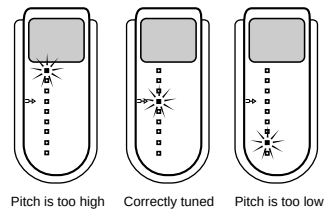
To cancel the Bypass mode, simply press one of the patch pedals. The unit then reverts to the previously selected patch.

Tuner mode

The 510 is initially set so that the auto-chromatic tuning function for the guitar activates automatically when the Bypass mode is invoked. In Bypass mode, pick an open string to be tuned. The closest note will be shown on the display.



When the tuning function is active, the parameter cursor LEDs serve as tuning meter, designed to enhance tuning precision during fine adjustments.



Turning tuning function off

If you do not want to activate the tuning function in Bypass mode, press the STORE and EDIT keys simultaneously for more than one second in Play mode. The tuning function will be turned off, and this setting will be stored even when the power is turned off. When you turn the function off, the display will show "tunEr oFF" (tuning function off).

To turn the tuning function on, press the same keys simultaneously again. The display will show "tunEr on" (tuning function on).

NOTE: Please note that the tuning function may not operate properly if other effect modules between the guitar and the 510 are on.

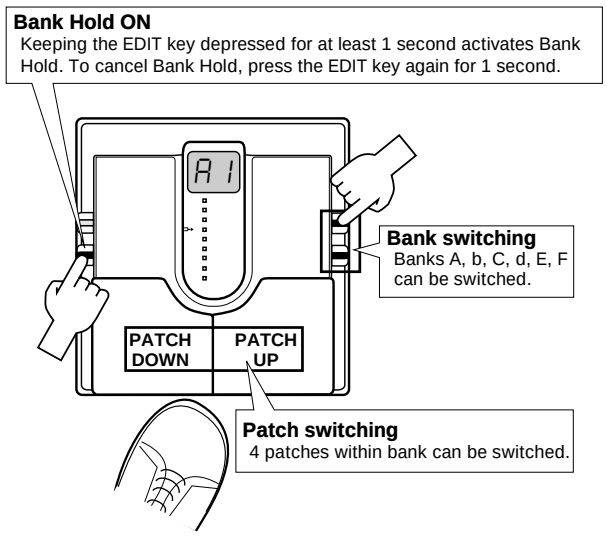
9 Patch Switching (Application: Bank Hold ON)

In the initial setting, the patch pedal switches all patches in order, regardless of the bank divisions.

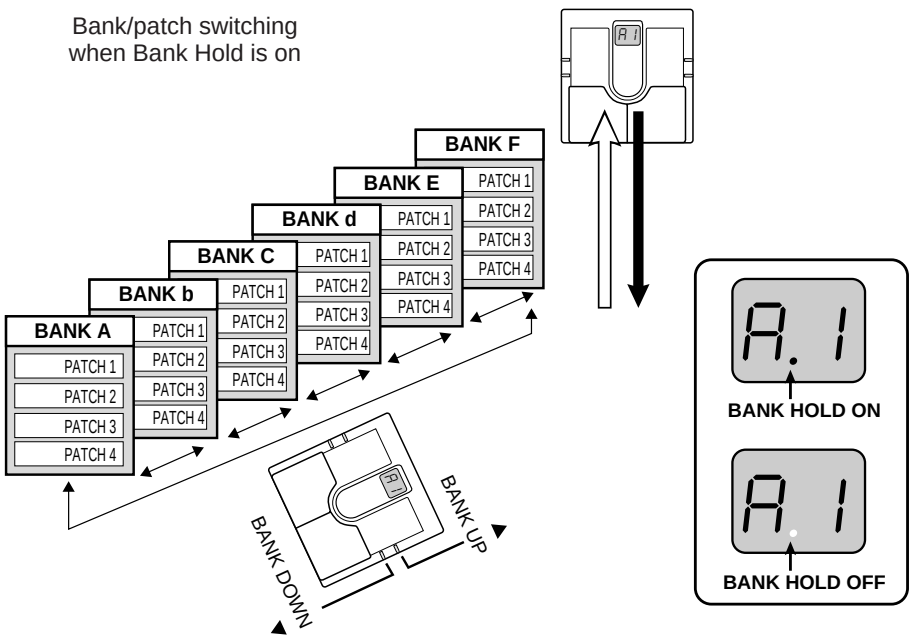
The bank hold function limits switching to the four patches within a bank. When this function is activated, the patch pedals switch in order between the patches in the current bank only.

To activate this function, hold the EDIT key down for at least 1 second in Play mode. The BANK HOLD indicator will light. To turn the function off, again hold the EDIT key down for at least 1 second. The BANK HOLD indicator will go off.

Banks can be switched using the VALUE +/- keys.


Bank Hold ON
Keeping the EDIT key depressed for at least 1 second activates Bank Hold. To cancel Bank Hold, press the EDIT key again for 1 second.
A 1
Bank switching
Banks A, b, C, d, E, F can be switched.
PATCH DOWN
PATCH UP
Patch switching
4 patches within bank can be switched.

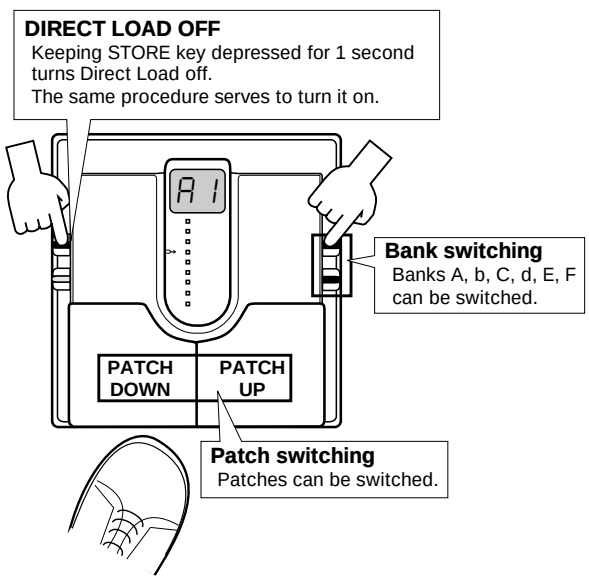
Bank/patch switching when Bank Hold is on



10 Patch Switching (Application: Direct Load OFF)

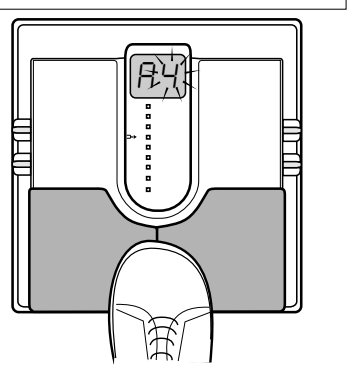
In the default condition, the 510 is set up in such a way that pressing a patch pedal immediately switches the patch and alters the output sound. This is called Direct Load ON. This switching principle is most convenient when the desired patches are adjacent or close to each other. However, when wanting to switch to a patch that is further away, it may be desirable not to activate the sound of the other patches in between.

When this is desired, turn the Direct Load function off as follows. When Direct Load has been turned off, switching banks and patches has no effect until the user confirms the selection.

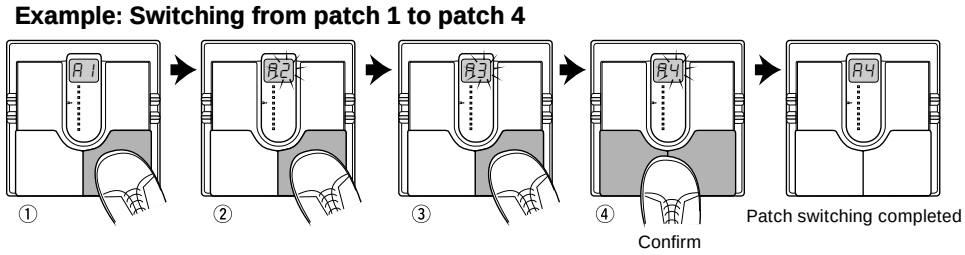

DIRECT LOAD OFF
Keeping STORE key depressed for 1 second turns Direct Load off.
The same procedure serves to turn it on.
A 1
Bank switching
Banks A, b, C, d, E, F can be switched.
PATCH DOWN
PATCH UP
Patch switching
Patches can be switched.

For example, when going from patch 1 to patch 4 with Direct Load active, patches 2 and 3 will briefly be heard when the patch UP pedal is pressed three times. When Direct Load is off, pressing the patch UP pedal will change the number on the display (the number flashes), but until the user confirms the choice, the sound remains that of patch 1.

To turn Direct Load on or off, keep the STORE key depressed for at least 1 second.
To confirm a choice after selecting a patch with Direct Load off, press both patch pedals simultaneously.


Confirming a patch
When display indication flashes, pressing both patch pedals together confirms the patch and switches the output sound.
A 4
Press both pedals together

Example: Switching from patch 1 to patch 4

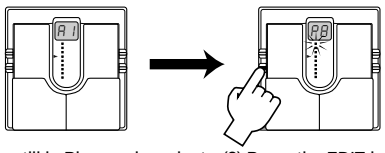


11 Editing Patches

The 510 comes with 24 predefined patches. However, the 510 offers many more possibilities for combining effects in innovative ways. To discover these possibilities, we recommend that you try changing the parameters (elements that make up patches) to create your own patches. This operation is called editing, and is done in the Edit mode.

To switch from normal Play mode to Edit mode, press the EDIT key briefly (for less than 1 second).

**** Note that if the EDIT key is held down for 1 second or longer, the Bank Hold mode will be activated.***



(1) While still in Play mode, select the patch you wish to edit.

(2) Press the EDIT key to activate the Edit mode.

Immediately after entering Edit mode from Play mode, the topmost parameter cursor indicator (PRE DRIVE) flashes, and the setting of this parameter is shown on the display. The flashing parameter cursor always indicates which parameter is selected for editing.

There are a total of eight indicators, assigned to parameters 1 – 8 from top to bottom, plus the TUNER indicator which is assigned to parameter 9. The parameter functions are as follows.

- Parameter 1: PRE DRIVE (PRE DRIVE effect type selection)
- Parameter 2: GAIN (PRE DRIVE parameter setting)
- Parameter 3: MAIN DRIVE (MAIN DRIVE effect type selection)
- Parameter 4: GAIN (MAIN DRIVE parameter setting)
- Parameter 5: HIGH (High-range equalizer)
- Parameter 6: LOW (Low-range equalizer)
- Parameter 7: ZNR/AMP (ZNR setting/amp simulator on, off)
- Parameter 8: LEVEL (Patch level)
- Parameter 9: SERIAL/PARA (Serial/parallel connection)

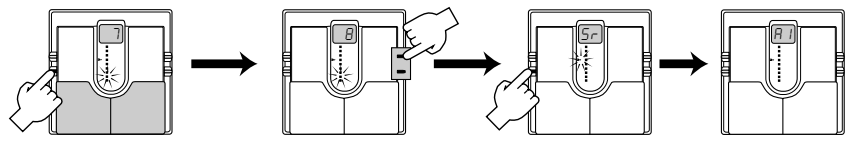
In Edit mode, the EDIT key or the PATCH UP/DOWN pedals serve to select the parameter.

Each push of the EDIT key moves the blinking parameter cursor indicator one step down. The PATCH UP/DOWN pedals move the blinking parameter cursor indicator up or down. When the EDIT key is pressed while the lowest indicator (Parameter 8: LEVEL) is flashing, the TUNER indicator (Parameter 9: SERIAL/PARA) starts flashing.

When the EDIT key is pressed while the TUNER indicator (Parameter 9: SERIAL/PARA) is selected, the Edit mode is terminated and the 510 reverts to the Play mode.

PATCH UP moves the blinking parameter cursor one step up and PATCH DOWN moves it one step down.

**** When the PATCH DOWN pedal is pressed while the TUNER indicator (Parameter 9: SERIAL/PARA) is flashing, the 510 stays in Edit mode and parameter 1 is selected.***



(1) Use the EDIT key or patch pedal to select the parameter you wish to change.

(2) Use the VALUE +/- keys to adjust the parameter.

(3) While the TUNER indicator (Parameter 9) is flashing, press the EDIT key to return to Play mode.

****Use the VALUE +/- keys to change the setting of the parameter.***
For details on parameters, please refer to section 12 "Effect Parameters".

12 Effect Parameters

PARAMETER 1 PRE DRIVE (PRE DRIVE effect type)

Selects the effect type to be used in the PRE DRIVE module. 8 different effect types are available.

Increases or decreases the setting by 1 effect type.

VALUE +/- keys

Setting range P1 – P8

Increases the setting by 1 effect type.

1 BOOSTER	2 RHYTHM	3 LIGHT OD	4 DYNAMIC OD	5 COMP	6 AUTO WAH	7 PEDAL WAH	8 OCTAVE
Creates a clean sound with prominent midrange.	Light distortion suitable for rhythm guitar.	**(Light overdrive)** Light overdrive effect.	**(Dynamic overdrive)** Dynamic overdrive effect with changing characteristics depending on picking intensity.	**(Compressor)** Conventional compressor effect.	Auto wah with changing characteristics depending on picking intensity.	Pedal wah for use with optional expression pedal FP01. The center frequency that is being emphasized goes up and down, depending on the pedal action.	Natural sounding octaver creating a sound one octave lower. For use with single notes only.

PARAMETER 2 GAIN (PRE DRIVE parameter setting)

Sets the effect parameter value for PRE DRIVE.
Which parameter is being adjusted depends on the effect type selected with parameter 1.

Increases or decreases the setting by 1.

VALUE +/- keys

Setting range 1 – 16

Skips to "10" if the current setting is 1 to 9 and to "16" if 10 to 15.

1 BOOSTER	2 RHYTHM	3 LIGHT OD	4 DYNAMIC OD	5 COMP	6 AUTO WAH	7 PEDAL WAH	8 OCTAVE
• GAIN: Adjusts the PRE DRIVE gain. Higher values result in higher PRE DRIVE gain and increased distortion.				**• SENS (Sensitivity) :** Adjust the effect sensitivity. Higher values result in higher sensitivity.		**• FREQ (Frequency):** Sets the center frequency that is active immediately after a patch is selected. Higher values result in higher center frequency.	**• MIX:** Adjusts the effect mixing level. Higher values result in higher effect mixing level.

* When changing the effect type with parameter 1, the immediately preceding value of parameter 2 is memorized.

PARAMETER 3 MAIN DRIVE (MAIN DRIVE effect type)

Selects the effect type to be used in the MAIN DRIVE module. 8 different effect types are available.

Increases or decreases the setting by 1 effect type.

VALUE +/- keys

Setting range M1 – M8

Increases the setting by 1 effect type.

1 OVER DRIVE	2 BLUES OD	3 FAT DRIVE	4 DISTORTION	5 FUZZ	6 GRUNGE	7 LEAD	8 METAL
Conventional overdrive effect.	**(Blues overdrive)** Trebly overdrive which makes it easy to control nuances with picking intensity.	Overdrive effect ranging from clean sound to fat distortion.	Distortion effect with a sound as when driving a large amplifier to full levels. Suitable for seventies type hard rock.	Fuzz effect reminiscent of the psychedelic sound of the sixties.	Modern fuzz effect with exciting sound.	Lead sound characterized by a mild tone.	Metal type sound with prominent lows and highs.

PARAMETER 4 GAIN (MAIN DRIVE parameter setting)

Setting range Pd, 1 – 30

Increases or decreases the setting by 1.

VALUE +/- keys

Skips to "Pd", "1", "10", "20", "30".

• GAIN :
Adjusts the MAIN DRIVE gain.
Higher values result in higher MAIN DRIVE gain and increased distortion.

When "Pd" is selected, the optional expression pedal FP01 can be used to adjust gain.

* When changing the effect type with parameter 3, the immediately preceding value of parameter 4 is memorized.

PARAMETER 5 HIGH (Equalizer HIGH range setting)

Setting range -15 – 0 – 15

Increases or decreases the setting by 1.

VALUE +/- keys

Skips to "-10" if current setting is -15 to -11 , to "0" if -10 to -1 , to "10" if 0 to 9 , and to "15" if 11 to 14 .

• HIGH :
Controls the high frequency range.

Negative values cause a high range cut and positive values a high range boost.

PARAMETER 6 LOW (Equalizer LOW range setting)

Setting range -15 – 0 – 15

Increases or decreases the setting by 1.

VALUE +/- keys

Skips to "-10" if current setting is -15 to -11 , to "0" if -10 to -1 , to "10" if 0 to 9 , and to "15" if 11 to 14 .

• LOW :
Controls the low frequency range.

Negative values cause a low range cut and positive values a low range boost.

PARAMETER 7 ZNR/AMP (ZNR settings, amp simulator on/off)

Setting range oF, 1 – 9, A1 – A9

Increases or decreases the setting by 1.

VALUE +/- keys

Skips to "oF", "1", "A1".

ZNR is Zoom's original noise reduction which cuts noise level during pauses. This parameter adjusts the ZNR sensitivity as well as the amp simulator on/off setting, which simulates the sound of an amplifier box.

- oF — ZNR and amp simulator off
- 1 – 9 — ZNR on, amp simulator off. Higher values result in more effective noise reduction. Choose the highest value that is possible without causing the sound to become unnatural.
- A1 — ZNR off, amp simulator on
- A2 – A9 — ZNR and amp simulator on. Higher values result in more effective noise reduction.

PARAMETER 8 LEVEL (Patch level)

Setting range 1 – 30

Increases or decreases the setting by 1.

VALUE +/- keys

Skips to "10", "20", "30" if current setting is 1 to 9.

Sets the overall patch level.
Higher values result in higher level.

PARAMETER 9 SERIAL/PARA (Serial/parallel)

Setting range Sr, P1 – P9, A1 – A9, a1 – a9, Pd

Increases or decreases the setting by 1.

VALUE +/- keys

Skips to "Sr", "P1", "A1", "a1", "Pd".

Determines the connection principle of the PRE DRIVE and MAIN DRIVE modules (serial or parallel).
The parameter also controls the mix level balance setting for parallel connection, the auto-parallel setting, and the pedal balance control setting.

- Sr — Serial connection
- P1 – P9 — Parallel connection. Larger values result in a higher MAIN DRIVE mix level.
- A1 – A9 — Auto-parallel connection, where the PRE DRIVE and MAIN DRIVE level balance is controlled by the picking intensity. The harder the picking intensity, the stronger the MAIN DRIVE influence.
- a1 – a9 — Auto-parallel connection. The harder the picking intensity, the stronger the PRE DRIVE influence.
- Pd — Pedal serves to control the PRE DRIVE and MAIN DRIVE level balance.

HINT 1 *Selection of parameters tochange*

As described in 11. Editing Patches, parameters to be edited are selected by repeatedly pressing the EDIT key, but you can also use the patch pedals for this purpose.

Press the PATCH UP pedal (right patch pedal) to move the parameter cursor from the bottom up.
Press the PATCH DOWN pedal (left patch pedal) to move the parameter cursor from the top down.

HINT 2 *Effect module on/off switching*

The PRE DRIVE, MAIN DRIVE, and ZNR/AMP modules can be switched on and off individually, and the status can be stored as part of a patch.

- ***To switch the PRE DRIVE module on and off***
  In Edit mode, while parameter 1 or 2 is selected, press the PATCH UP and DOWN pedals together to turn the PRE DRIVE module off.
  The display indication for parameter 1 becomes "oF" and for parameter 2 "--".
- ***To switch the MAIN DRIVE module on and off***
  In Edit mode, while parameter 3 or 4 is selected, press the PATCH UP and DOWN pedals together to turn the MAIN DRIVE module off.
  The display indication for parameter 3 becomes "oF" and for parameter 4 "--".
- ***To switch the ZNR/AMP module on and off***
  In Edit mode, while parameter 7 is selected, press the PATCH UP and DOWN pedals together to turn the ZNR/AMP module off.
  The display indication for parameter 7 becomes "oF".
- *For any module that is turned off, pressing the PATCH UP and DOWN pedals together or pressing a VALUE key once turns the module to on again and restores the parameter to the original setting that was active before the module was turned off.*

HINT 3 *Parameter setting shortcuts*

Normally, parameter values are set by tapping the VALUE + or VALUE - key once for each increment or decrement. For quick operation, you can use the shortcut function. This is activated in the Edit mode by pressing both VALUE keys together.
For example, if GAIN (parameter 4) of the MAIN DRIVE module is set to "Pd" (pedal controls gain) and you want to change it to "12", you would have to press the VALUE + key 12 times. Instead, you can achieve the same effect by using the shortcut function: press the VALUE +/- keys together twice, which will change the value to "10" and then press the VALUE + key 2 times to arrive at "12".

HINT 4 *Master level adjustment*

With the 510 you are also able to set the master level that governs the overall output level.

The master level is adjusted in Play mode. Hold the VALUE +/- keys down simultaneously for at least 1 second. The current master level will be displayed for 1 second.

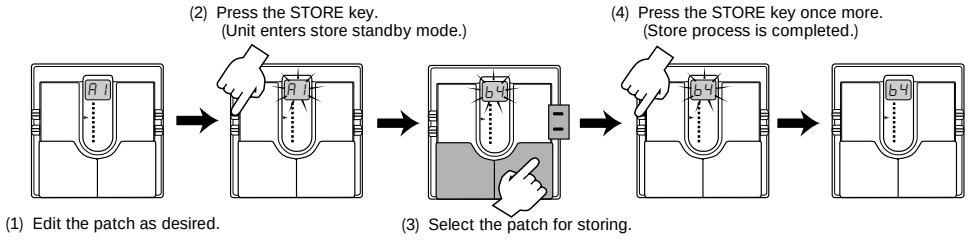
While the level is being displayed, use the VALUE +/- keys to change it. The setting range is 0-50. (Default value = 40)

The unit does not store the setting for the master level. Each time the power is turned on it has to be set again.

13 Storing Patches

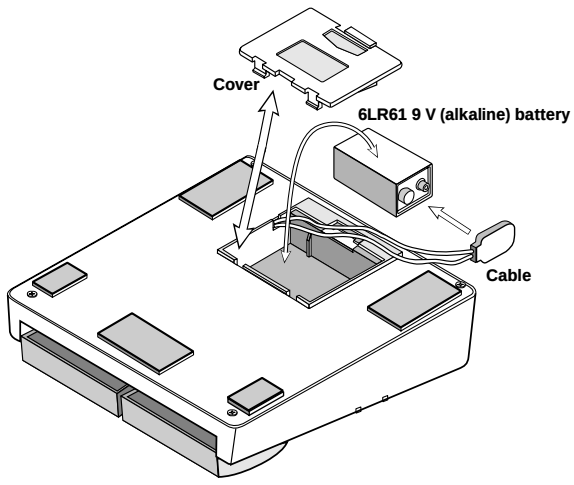
If you have edited (altered) a patch and turn the 510 off without storing the patch, the patch will revert to its old setting. To store an edited patch, use the following simple procedure.

Storing can be carried out in both Play mode and Edit mode.
After you have edited the patch, press the STORE key. If the unit is currently in Play mode, release the key before 1 second has elapsed, otherwise the Direct Load function will be activated.
The display starts to flash. This condition is called the store standby condition. If you wish, you can abandon the store procedure at this point by pressing the EDIT key. If you press the STORE key once more, the contents of the patch are updated.
You can also change the patch number before storing, so that the edited patch will be stored in a different number.
In this case, the original patch that was used as a starting point for editing will not be changed.


(2) Press the STORE key.
(Unit enters store standby mode.)
(4) Press the STORE key once more.
(Store process is completed.)
(1) Edit the patch as desired.
(3) Select the patch for storing.

14 Replacing the Battery

If the tuning indicator flashes while the unit is being powered from the battery, the battery is exhausted and should be replaced as described below.
Use only a 6LR61 9 V (alkaline) battery.
Using another kind of battery will result in shorter operation.



1. **Turn the 510 upside down and open the cover of the battery compartment. (Push the catch to unlock the cover, then lift it up.)**
2. **Remove the battery from the compartment and disconnect the battery cable. (Grasp the terminal strip and do not pull at the cable.)**
3. **Connect the battery cable to the new battery, taking care to observe correct polarity (+/-). Then insert the battery into the battery compartment.**
4. **Close the battery compartment cover, taking care not to pinch the cable. (Make sure that the cover is properly locked.)**

15 Returning Patches to Factory Settings

The 510 comes with 24 predefined patches that have been programmed at the factory. Also after you have edited and stored your own patches, you can return to the factory default settings at any time. This process is called "recalling". Returning all 24 patches to the original contents and resetting the Bank Hold and Direct Load functions is called "all initialize".

The Recall mode is separate from the Play mode and Edit mode. You cannot switch directly to Recall mode from these modes. The Recall mode can only be activated by turning the unit on in a special way, as described below.

1. **Turn the unit off by disconnecting the AC adapter or the guitar input cable.**
2. **Keep the STORE key depressed and turn the unit on.**
3. **The indication "AL" flashes on the display.**
4. **To perform "all initialize", press the STORE key once more in this condition. The flashing rate increases and the initialization procedure is carried out. When it is completed, the unit automatically enters the Play mode.**
5. **When wishing to recall only a particular patch, select the patch number in step 3, using the same procedure as for normal patch selection.**
6. **When the desired patch has been selected, press the STORE key. The flashing rate increases and the contents of the selected patch are recalled.**
7. **Recalling of individual patches can be carried out continuously. When you wish to terminate the process, press the EDIT key. The unit then returns to the Play mode. Turning the unit off also terminates the recall condition.**

16 Specifications

Effects:	19 effects • PRE DRIVE Booster, Rhythm, Light Overdrive, Dynamic Overdrive, Compressor, Auto Wah, Pedal Wah, Octave • MAIN DRIVE Overdrive, Blues Overdrive, Fat Drive, Distortion, Fuzz, Grunge, Lead, Metal • Equalizer • ZNR (Zoom Noise Reduction) • Amp Simulator Maximum simultaneous effects: 5
Banks and Patches:	6 banks x 4 patches = 24 patches (edit + store possible)
Analog/Digital Conversion:	18 bit, 128 times oversampling
Digital/Analog Conversion:	16 bit, linear
Sampling Frequency:	44.1 kHz
Input:	Guitar input (standard monaural phone jack) Rated input level: -20 dBm Input impedance: 470 kilohms
Outputs:	Combined line/headphone output (standard stereo phone jack) Max. output level: +6 dBm Output load impedance: 10 kilohms or more DIRECT OUT (standard monaural phone jack)
Control Input:	For optional FP01 or FS01
Display:	2-digit, 7-segment LED, tuning indicator, parameter cursor indicator
Power Requirements:	Optional AC adapter 9 VDC, 300 mA (Zoom AD-0006) Battery: 6LR61 9 V (alkaline) battery x 1 Battery life: Approx. 4 h continuous operation
Dimensions:	147 (W) x 157 (D) x 49 (H) mm
Weight:	480 g (without batteries)

* ***0 dBm = 0.775 Vrms***
* ***Design and specifications subject to change without notice.***